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10/599,256	09/23/2006	Guofu Zhou	US040166US2	1863

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EXAMINER	
BOYD, JONATHAN A	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,256	ZHOU ET AL.	
	Examiner	Art Unit	
	JONATHAN BOYD	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _23 September 2006_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-29_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-29_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _23 September 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _1/25/2007_.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application number 10/599,256 filed September 23rd 2006. Claims 1-29 are currently pending and have been examined.

Information Disclosure Statement

2. Acknowledgment is made of Applicant's Information Disclosure Statement (IDS) Form PTO-1449 filed on January 25th 2007. The IDS has been considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 4-6, 9-15, 18-23, 26-29 are rejected under 35 U.S.C. 102(a) as being anticipated by Zehner et al (WO 2003/044765) (herein “Zehner”).

In regard to claims 1 and 23, Zehner teaches a method for driving and electronic reading device (*See; Page 57, line 30 – Page 58, line 5*), comprising: a bi-stable display (*See; Page 58, lines 19-22*); and a control for driving a bi-stable display with reduced cross talk (*See; Page 20, line 21 - Page 21, line 5 where reducing cross talk is a result to be achieved. All technical features are presented which result in the desired effect; therefore it is inherent that reducing crosstalk would be a logical result*) by: (a)

accessing data defining at least first and second voltage waveforms (*See; Page 20, line 21-26 where for each pixel, an array of voltages versus time is retrieved from a look-up table. For e.g. adjacent pixels having different gradation levels, different waveforms are retrieved*), (b) generating the first voltage waveform for driving a first portion of the bi-stable display (*e.g. a first pixel of the display in Zehner*) according to the accessed data from a first optical state (*Assuming that initially each pixel was set to black, which is defined as the first optical state*) to a second optical state that is close to the first optical state (*The second optical state, which is the next optical state for e.g. a first pixel, being merely a result of the image data for displaying the next image on the display of Zehner*), and (c) generating the second voltage waveform for driving a second portion of the bi-stable display (*e.g. a second pixel in the display of Zehner*) according to the accessed data from the first optical state to a third optical state that is substantially different than the first optical state (*The third optical state which is the next optical state for e.g. a second pixel adjacent to the first pixel, being merely a result of the image data for displaying the next image on the display of Zehner*), such that the second voltage waveform is set to terminate at a different time than the first voltage waveform by a time difference of at least one frame period (*See; Page 21, lines 6-9, 20-27; Page 27, lines 1-4 where the duration of a drive pulse is always an integer number of frame durations. The total duration of a drive pulse depends on the initial optical state and the final optical state of a pixel. Therefore a difference between the termination times of the drive pulse applied to the first and the second pixels may occur depending on the initial and the final optical states of both pixels*).

In regards to claims 4, 18 and 26, Zehner teaches wherein: the generating the second voltage waveform for driving the second portion of the bi-stable display according to the accessed data from the first optical state to the third optical state comprises driving the second portion of the bi-stable display according to the accessed data such that the second voltage waveform is set to terminate before the first voltage waveform by the time difference of at least one frame period (*See; Page 21, lines 6-9, 20-27; Page 27, lines 1-4 where the duration of a drive pulse is always an integer number of frame durations. The total duration of a drive pulse depends on the initial optical state and the final optical state of a pixel. Therefore a difference between the termination times of the drive pulse applied to the first and the second pixels, namely the second voltage waveform terminating before the first voltage waveform, may occur depending on the initial and the final optical states of both pixels*).

In regards to claim 5, 19 and 27, Zehner teaches the second optical state is substantially the same as the first optical state (*See; Page 19, lines 16-26 where the initial and final states of the pixel are the same*).

In regards to claims 6, 20 and 28, Zehner teaches determining the time difference based on an ambient temperature (*See; Page 16, line 20 – Page 18, line 2 where also the time difference between the termination times of the drive waveforms might change if the temperature changes*).

In regards to claim 9 and 21, Zehner teaches wherein: the generating the second voltage waveform for driving the second portion of the bi-stable display according to the accessed data from the first optical state to the third optical state comprises driving the second portion of the bi-stable display according to the accessed data from one extreme optical state to another extreme optical state (*See; Page 53, lines 29-30 for going from an extreme black or white optical state to the opposite extreme optical state*).

In regards to claim 10, Zehner teaches wherein: the generating the second voltage waveform for driving the second portion of the bi-stable display according to the accessed data from the first optical state to the third optical state comprises driving the second portion of the bi-stable display according to the accessed data from one intermediate optical state to another intermediate optical state (*See; Page 52, lines 1-9 for a gray to gray transition*).

In regards to claim 11, Zehner teaches wherein: the generating the second voltage waveform for driving the second portion of the bi-stable display according to the accessed data from the first optical state to the third optical state comprises driving the second portion of the bi-stable display according to the accessed data from one extreme optical state to an intermediate optical state (*See; Page 53, lines 23-28 and Figures 11A and 11B where a pixel may rest at any intermediate gray level from an extreme optical state*).

In regards to claim 12, Zehner teaches wherein: the generating the second voltage waveform for driving the second portion of the bi-stable display according to the accessed data from the first optical state to the third optical state comprises driving the second portion of the bi-stable display according to the accessed data from one intermediate optical state to an extreme optical state (*See; Page 53, lines 23-28 and Figures 11A and 11B where a pixel may rest at any intermediate gray level before continuing on to an extreme optical state*).

In regards to claim 13, Zehner teaches wherein: the generating the first voltage waveform comprises generating the first voltage waveform having at least one driving pulse and at least one additional pulse of opposite polarity; and the generating the second voltage waveform comprises generating the second voltage waveform having at least one driving pulse and at least one additional pulse of opposite polarity (*See; Page 45, lines 5-9 where driving the pixels back and forth between two optical states, pulses of alternating polarity are needed*).

In regards to claims 14, 22 and 29, Zehner teaches wherein: the bi-stable display comprises an electrophoretic display (*See; Page 58, lines 19-22*).

In regards to claim 15, Zehner teaches a program storage device tangibly embodying a program of instructions executable by a machine (*See; Page 19, lines 29-*

31 for a general purpose digital computer and see; Page 20-lines 18-20 where it executes a controller program of instructions);to perform a method for driving a bi-stable display with reduced cross talk (*See; Page 20, line 21 - Page 21, line 5 where reducing cross talk is a result to be achieved. All technical features are presented which result in the desired effect; therefore it is inherent that reducing crosstalk would be a logical result.*), the method comprising: accessing data defining at least first and second voltage waveforms (*See; Page 20, line 21-26 where for each pixel, an array of voltages versus time is retrieved from a look-up table. For e.g. adjacent pixels having different gradation levels, different waveforms are retrieved*); generating the first voltage waveform for driving a first portion of the bi-stable display (*e.g. a first pixel of the display in Zehner*) according to the accessed data from a first optical state (*Assuming that initially each pixel was set to black, which is defined as the first optical state*) to a second optical state that is close to the first optical state (*The second optical state, which is the next optical state for e.g. a first pixel, being merely a result of the image data for displaying the next image on the display of Zehner*), and (c) generating the second voltage waveform for driving a second portion of the bi-stable display (*e.g. a second pixel in the display of Zehner*) according to the accessed data from the first optical state to a third optical state that is substantially different than the first optical state (*The third optical state which is the next optical state for e.g. a second pixel adjacent to the first pixel, being merely a result of the image data for displaying the next image on the display of Zehner*), such that the second voltage waveform is set to terminate at a different time than the first voltage waveform by a time difference of at

least one frame period (*See; Page 21, lines 6-9, 20-27; Page 27, lines 1-4 where the duration of a drive pulse is always an integer number of frame durations. The total duration of a drive pulse depends on the initial optical state and the final optical state of a pixel. Therefore a difference between the termination times of the drive pulse applied to the first and the second pixels may occur depending on the initial and the final optical states of both pixels*).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 2, 3, 7, 8, 16, 17, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al (WO 2003/044765) (herein "Zehner") in view of Francis (5,841,411).

In regards to claims 2, 16 and 24, Francis teaches wherein: the generating the

second voltage waveform for driving the second portion of the bi-stable display according to the accessed data from the first optical state to the third optical state comprises driving the second portion of the bi-stable display with at least one drive pulse; and the generating the first voltage waveform for driving the first portion of the bi-stable display according to the accessed data from the first optical state to the second optical state comprises driving the first portion of the bi-stable display with at least one drive pulse that at least partly compensates for a cross talk induced by the at least one drive pulse of the second voltage waveform (*See; Abstract, where the idea to reduce inter-pixel crosstalk by correcting the gradation level of a certain pixel according to the gradation levels applied to neighboring pixels is taught*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply Francis' crosstalk reduction method to Zehner's display device to further reduce crosstalk.

In regards to claim 3, 17 and 25, Zehner teaches wherein: the generating the first voltage waveform for driving the first portion of the bi-stable display according to the accessed data from the first optical state to the second optical state comprises driving the first portion of the bi-stable display so that the at least one drive pulse thereof is at least partly overlapping with the at least one drive pulse of the second voltage waveform (*See; Page 15, lines 12-18;–Page 21, lines 6-9 where the duration of a drive pulse applied to a pixel depends on the impulse needed to drive the pixel from an initial to a final optical state. If different impulses are needed for different pixels, the drive pulses*

for different pixels will be overlapping).

In regards to claims 7, Zehner does not explicitly teach the time difference relative to a total time of the second voltage waveform is expressed by t2/(t1+t2)x100% >5%. However since the disclosure offers no unexpected results from having this value then it is deemed a design choice since all technical features are presented by Zehner which result in the desired effect. Therefore it would have obvious to one of ordinary skill in the art at the time of the invention to use values of t1 and t2 to achieve the above parameter above as a mere design choice.

In regards to claims 8, Zehner does not explicitly teach the time difference relative to a total time of the second voltage waveform is expressed by t2/(t1+t2)x100% >10%. However since the disclosure offers no unexpected results from having this value then it is deemed a design choice since all technical features are presented by Zehner which result in the desired effect. Therefore it would have obvious to one of ordinary skill in the art at the time of the invention to use values of t1 and t2 to achieve the above parameter above as a mere design choice.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN BOYD whose telephone number is (571)270-7503. The examiner can normally be reached on Mon - Fri 6:00 - 4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B./
Examiner, Art Unit 2629

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629